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<110> Colgan, Sean

<120> Compositions and Methods for Treating Hematologic Malignancies and Multiple Drug Resistance

<130> B0801/7233 (ERP)

<150> US 60/243,542
<151> 2000-10-26

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Lys Thr His His Asp Met Phe Thr Lys Gly Gln Val Thr Thr Gly Gln
    290                 295                 300

Tyr Arg Met Leu Ala Lys Arg Gly Gly Tyr Val Trp Val Glu Thr Gln
305                 310                 315                 320

Ala Thr Val Ile Tyr Asn Thr Lys Asn Ser Gln Pro Gln Cys Ile Val
                325                 330                 335

Cys Val Asn Tyr Val Val Ser Gly Ile Ile Gln His Asp Leu Ile Phe
            340                 345                 350

Ser Leu Gln Gln Thr Glu Cys Val Leu Lys Pro Val Glu Ser Ser Asp
        355                 360                 365

Met Lys Met Thr Gln Leu Phe Thr Lys Val Glu Ser Glu Asp Thr Ser
    370                 375                 380

Ser Leu Phe Asp Lys Leu Lys Lys Glu Pro Asp Ala Leu Thr Leu Leu
385                 390                 395                 400

Ala Pro Ala Ala Gly Asp Thr Ile Ile Ser Leu Asp Phe Gly Ser Asn
                405                 410                 415

Asp Thr Glu Thr Asp Asp Gln Gln Leu Glu Glu Val Pro Leu Tyr Asn
            420                 425                 430

Asp Val Met Leu Pro Ser Pro Asn Glu Lys Leu Gln Asn Ile Asn Leu
        435                 440                 445

Ala Met Ser Pro Leu Pro Thr Ala Glu Thr Pro Lys Pro Leu Arg Ser
    450                 455                 460

Ser Ala Asp Pro Ala Leu Asn Gln Glu Val Ala Leu Lys Leu Glu Pro
465                 470                 475                 480

Asn Pro Glu Ser Leu Glu Leu Ser Phe Thr Met Pro Gln Ile Gln Asp
                485                 490                 495

Gln Thr Pro Ser Pro Ser Asp Gly Ser Thr Arg Gln Ser Ser Pro Glu
            500                 505                 510
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Pro Asn Ser Pro Ser Glu Tyr Cys Phe Tyr Val Asp Ser Asp Met Val
        515                 520                 525

Asn Glu Phe Lys Leu Glu Leu Val Glu Lys Leu Phe Ala Glu Asp Thr
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Glu Ala Lys Asn Pro Phe Ser Thr Gln Asp Thr Asp Leu Asp Leu Glu
545                 550                 555                 560

Met Leu Ala Pro Tyr Ile Pro Met Asp Asp Asp Phe Gln Leu Arg Ser
                565                 570                 575

Phe Asp Gln Leu Ser Pro Leu Glu Ser Ser Ser Ala Ser Pro Glu Ser
            580                 585                 590

Ala Ser Pro Gln Ser Thr Val Thr Val Phe Gln Gln Thr Gln Ile Gln
        595                 600                 605

Glu Pro Thr Ala Asn Ala Thr Thr Thr Thr Ala Thr Thr Asp Glu Leu
    610                 615                 620

Lys Thr Val Thr Lys Asp Arg Met Glu Asp Ile Lys Ile Leu Ile Ala
625                 630                 635                 640

Ser Pro Ser Pro Thr His Ile His Lys Glu Thr Thr Ser Ala Thr Ser
                645                 650                 655

Ser Pro Tyr Arg Asp Thr Gln Ser Arg Thr Ala Ser Pro Asn Arg Ala
            660                 665                 670

Gly Lys Gly Val Ile Glu Gln Thr Glu Lys Ser His Pro Arg Ser Pro
        675                 680                 685

Asn Val Leu Ser Val Ala Leu Ser Gln Arg Thr Thr Val Pro Glu Glu
    690                 695                 700

Glu Leu Asn Pro Lys Ile Leu Ala Leu Gln Asn Ala Gln Arg Lys Arg
705                 710                 715                 720

Lys Met Glu His Asp Gly Ser Leu Phe Gln Ala Val Gly Ile Gly Thr
                725                 730                 735

Leu Leu Gln Gln Pro Asp Asp His Ala Ala Thr Thr Ser Leu Ser Trp
            740                 745                 750
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Lys Arg Val Lys Gly Cys Lys Ser Ser Glu Gln Asn Gly Met Glu Gln
755 760 765

Lys Thr Ile Ile Leu Ile Pro Ser Asp Leu Ala Cys Arg Leu Leu Gly
770 775 780

Gln Ser Met Asp Glu Ser Gly Leu Pro Gln Leu Thr Ser Tyr Asp Cys
785 790 795 800

Glu Val Asn Ala Pro Ile Gln Gly Ser Arg Asn Leu Leu Gln Gly Glu
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Glu Leu Leu Arg Ala Leu Asp Gln Val Asn
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<400> 5

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agcggcgacc agggctggat tttgatgatg atggagaagg gaacagtaaa tttttgaggt 240

gtgatgatga tcagatgtct aacgataagg agcggtttgc caggtcggat gatgagcaga 300

gctctgcgga taaagagaga cttgccaggg aaaatcacag tgaaattgaa cggcggcgac 360

ggaacaagat gacagcctac atcacagaac tgtcagatat ggtacccacc tgtagtgccc 420

tggctcgaaa accagacaag ctaaccatct tacgcatggc agtttctcac atgaagtcct 480

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<212> PRT
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Leu Gly Pro Ala Ile Ala Ser Gly Asn Ser Gly Pro Gly Ile Gln Gly
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Gly Gly Ala Ile Val Gln Arg Ala Ile Lys Arg Arg Pro Gly Leu Asp
        35                  40                  45

Phe Asp Asp Asp Gly Glu Gly Asn Ser Lys Phe Leu Arg Cys Asp Asp
    50                  55                  60

Asp Gln Met Ser Asn Asp Lys Glu Arg Phe Ala Arg Ser Asp Asp Glu
65                  70                  75                  80

Gln Ser Ser Ala Asp Lys Glu Arg Leu Ala Arg Glu Asn His Ser Glu
                85                  90                  95

Ile Glu Arg Arg Arg Arg Asn Lys Met Thr Ala Tyr Ile Thr Glu Leu
            100                 105                 110

Ser Asp Met Val Pro Thr Cys Ser Ala Leu Ala Arg Lys Pro Asp Lys
        115                 120                 125

Leu Thr Ile Leu Arg Met Ala Val Ser His Met Lys Ser Leu Arg Gly
    130                 135                 140

Thr Gly Asn Thr Ser Thr Asp Gly Ser Tyr Lys Pro Ser Phe Leu Thr
145                 150                 155                 160

Asp Gln Glu Leu Lys His Leu Ile Leu Glu Ala Ala Asp Gly Phe Leu
                165                 170                 175

Phe Ile Val Ser Cys Glu Thr Gly Arg Val Val Tyr Val Ser Asp Ser
            180                 185                 190

Val Thr Pro Val Leu Asn Gln Pro Gln Ser Glu Trp Phe Gly Ser Thr
        195                 200                 205

Leu Tyr Asp Gln Val His Pro Asp Asp Val Asp Lys Leu Arg Glu Gln
    210                 215                 220
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Leu Ser Thr Ser Glu Asn Ala Leu Thr Gly Arg Ile Leu Asp Leu Lys
225                 230                 235                 240

Thr Gly Thr Val Lys Lys Glu Gly Gln Gln Ser Ser Met Arg Met Cys
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Met Gly Ser Arg Arg Ser Phe Ile Cys Arg Met Arg Cys Gly Ser Ser
            260                 265                 270

Ser Val Asp Pro Val Ser Val Asn Arg Leu Ser Phe Val Arg Asn Arg
        275                 280                 285

Cys Arg Asn Gly Leu Gly Ser Val Lys Asp Gly Glu Pro His Phe Val
    290                 295                 300

Val Val His Cys Thr Gly Tyr Ile Lys Ala Trp Pro Pro Ala Gly Val
305                 310                 315                 320

Ser Leu Pro Asp Asp Asp Pro Glu Ala Gly Gln Gly Ser Lys Phe Cys
                325                 330                 335

Leu Val Ala Ile Gly Arg Leu Gln Val Thr Ser Ser Pro Asn Cys Thr
            340                 345                 350

Asp Met Ser Asn Val Cys Gln Pro Thr Glu Phe Ile Ser Arg His Asn
        355                 360                 365

Ile Glu Gly Ile Phe Thr Phe Val Asp His Arg Cys Val Ala Thr Val
    370                 375                 380

Gly Tyr Gln Pro Gln Glu Leu Leu Gly Lys Asn Ile Val Glu Phe Cys
385                 390                 395                 400

His Pro Glu Asp Gln Gln Leu Leu Arg Asp Ser Phe Gln Gln Val Val
                405                 410                 415

Lys Leu Lys Gly Gln Val Leu Ser Val Met Phe Arg Phe Arg Ser Lys
            420                 425                 430

Asn Gln Glu Trp Leu Trp Met Arg Thr Ser Ser Phe Thr Phe Gln Asn
        435                 440                 445

Pro Tyr Ser Asp Glu Ile Glu Tyr Ile Ile Cys Thr Asn Thr Asn Val
    450                 455                 460
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Lys Asn Ser Ser Gln Glu Pro Arg Pro Thr Leu Ser Asn Thr Ile Gln
465                 470                 475                 480

Arg Pro Gln Leu Gly Pro Thr Ala Asn Leu Pro Leu Glu Met Gly Ser
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Gly Gln Leu Ala Pro Arg Gln Gln Gln Gln Gln Thr Glu Leu Asp Met
            500                 505                 510

Val Pro Gly Arg Asp Gly Leu Ala Ser Tyr Asn His Ser Gln Val Val
        515                 520                 525

Gln Pro Val Thr Thr Thr Gly Pro Glu His Ser Lys Pro Leu Glu Lys
    530                 535                 540

Ser Asp Gly Leu Phe Ala Gln Asp Arg Asp Pro Arg Phe Ser Glu Ile
545                 550                 555                 560

Tyr His Asn Ile Asn Ala Asp Gln Ser Lys Gly Ile Ser Ser Ser Thr
                565                 570                 575

Val Pro Ala Thr Gln Gln Leu Phe Ser Gln Gly Asn Thr Phe Pro Pro
            580                 585                 590

Thr Pro Arg Pro Ala Glu Asn Phe Arg Asn Ser Gly Leu Ala Pro Pro
        595                 600                 605

Val Thr Ile Val Gln Pro Ser Ala Ser Ala Gly Gln Met Leu Ala Gln
    610                 615                 620

Ile Ser Arg His Ser Asn Pro Thr Gln Gly Ala Thr Pro Thr Trp Thr
625                 630                 635                 640

Pro Thr Thr Arg Ser Gly Phe Ser Ala Gln Gln Val Ala Thr Gln Ala
                645                 650                 655

Thr Ala Lys Thr Arg Thr Ser Gln Phe Gly Val Gly Ser Phe Gln Thr
            660                 665                 670

Pro Ser Ser Phe Ser Ser Met Ser Leu Pro Gly Ala Pro Thr Ala Ser
        675                 680                 685

Pro Gly Ala Ala Ala Tyr Pro Ser Leu Thr Asn Arg Gly Ser Asn Phe
    690                 695                 700
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Ala Pro Glu Thr Gly Gln Thr Ala Gly Gln Phe Gln Thr Arg Thr Ala
705 710 715 720

Glu Gly Val Gly Val Trp Pro Gln Trp Gln Gly Gln Gln Pro His His
725 730 735

Arg Ser Ser Ser Ser Glu Gln His Val Gln Gln Pro Pro Ala Gln Gln
740 745 750

Pro Gly Gln Pro Glu Val Phe Gln Glu Met Leu Ser Met Leu Gly Asp
755 760 765

Gln Ser Asn Ser Tyr Asn Asn Glu Glu Phe Pro Asp Leu Thr Met Phe
770 775 780

Pro Pro Phe Ser Glu
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ttcacttcaa agtgaaaatg acaacacatc tcaagaaact caaagaatca tactgtcaaa 240

gacagggtgt tccaatgaat tcactcaggt ttctctttga gggtcagaga attgctgata 300

atcatactcc aaaagaactg ggaatggagg aagaagatgt gattgaagtt tatcaggaac 360

aaacgggggg tcattcaaca gtttagatat tctttttatt ttttttcttt tccctcaatc 420

ctttttttatt tttaaaaata gttcttttgt aatgtggtgt tcaaaacgga attgaaaact 480

ggcaccccat ctctttgaaa catctggtaa tttgaattct agtgctcatt attcattatt 540

gtttgttttc attgtgctga tttttggtga tcaagcctca gtccccttca tattaccctc 600

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ggcttgtggt gataaataag atcgaccaat gcaagtgttc ataatgactt tccaattggc 720

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Glu Ile His Phe Lys Val Lys Met Thr Thr His Leu Lys Lys Leu Lys
35 40 45

Glu Ser Tyr Cys Gln Arg Gln Gly Val Pro Met Asn Ser Leu Arg Phe
50 55 60

Leu Phe Glu Gly Gln Arg Ile Ala Asp Asn His Thr Pro Lys Glu Leu
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Gly Met Glu Glu Glu Asp Val Ile Glu Val Tyr Gln Glu Gln Thr Gly
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Gly His Ser Thr Val
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acgtggtgtt ctccatggac cagactgaat ccctgttcaa gccccacctg atggccatga    1260
acagcatctt tgatagcagt ggcaaggggg ctgtgtctga gaagagtaac ttcctattca    1320
ccaagctaaa ggaggagccc gaggagctgg cccagctggc tcccaccccа ggagacgcca    1380
tcatctctct ggatttcggg aatcagaact tcgaggagtc ctcagcctat ggcaaggcca    1440
tcctgccccc gagccagcca tgggccacgg agttgaggag ccacagcacc cagagcgagg    1500
ctgggagcct gcctgccttc accgtgcccc aggcagctgc cccgggcagc accaccccca    1560
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gtgccaccag cagcagcagc agctgctcca cgcccaatag ccctgaagac tattacacat 1620

ctttggataa cgacctgaag attgaagtga ttgagaagct cttcgccatg gacacagagg 1680

ccaaggacca atgcagtacc cagacggatt tcaatgagct ggacttggag acactggcac 1740

cctatatccc catggacggg gaagacttcc agctaagccc catctgcccc gaggagcggc 1800

tcttggcgga gaacccacag tccacccccc agcactgctt cagtgccatg acaaacatct 1860

tccagccact ggcccctgta gccccgcaca gtcccttcct cctggacaag tttcagcagc 1920

agctggagag caagaagaca gagcccgagc accggcccat gtcctccatc ttctttgatg 1980

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agtgggccgt cggggatcag cgcacagagt tcttgggagc agcgccgttg gggccccctg 2160

tctctccacc ccatgtctcc accttcaaga caaggtctgc aaagggtttt ggggctcgag 2220

gcccagacgt gctgagtccg gccatggtag ccctctccaa caagctgaag ctgaagcgac 2280

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ccggggagaa cagcaagagc aggttccccc cacagtgcta cgccacccag taccaggact 2580

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tgggaagctc cacgctcctg caaggagggg acctcctcag agccctggac caggccacct 2760

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<210> 60
<211> 870
<212> PRT
<213> homo sapiens

<400> 60

Met Thr Ala Asp Lys Glu Lys Lys Arg Ser Ser Ser Glu Arg Arg Lys
1 5 10 15

Glu Lys Ser Arg Asp Ala Ala Arg Cys Arg Arg Ser Lys Glu Thr Glu
20 25 30

Val Phe Tyr Glu Leu Ala His Glu Leu Pro Leu Pro His Ser Val Ser

```
        35                  40                  45

Ser His Leu Asp Lys Ala Ser Ile Met Arg Leu Glu Ile Ser Phe Leu
    50                  55                  60

Arg Thr His Lys Leu Leu Ser Ser Val Cys Ser Glu Asn Glu Ser Glu
65                  70                  75                  80

Ala Glu Ala Asp Gln Gln Met Asp Asn Leu Tyr Leu Lys Ala Leu Glu
                85                  90                  95

Gly Phe Ile Ala Val Val Thr Gln Asp Gly Asp Met Ile Phe Leu Ser
            100                 105                 110

Glu Asn Ile Ser Lys Phe Met Gly Leu Thr Gln Val Glu Leu Thr Gly
        115                 120                 125

His Ser Ile Phe Asp Phe Thr His Pro Cys Asp His Glu Glu Ile Arg
    130                 135                 140

Glu Asn Leu Ser Leu Lys Asn Gly Ser Gly Phe Gly Lys Lys Ser Lys
145                 150                 155                 160

Asp Met Ser Thr Glu Arg Asp Phe Phe Met Arg Met Lys Cys Thr Val
                165                 170                 175

Thr Asn Arg Gly Arg Thr Val Asn Leu Lys Ser Ala Thr Trp Lys Val
            180                 185                 190

Leu His Cys Thr Gly Gln Val Lys Val Tyr Asn Asn Cys Pro Pro His
        195                 200                 205

Asn Ser Leu Cys Gly Tyr Lys Glu Pro Leu Leu Ser Cys Leu Ile Ile
    210                 215                 220

Met Cys Glu Pro Ile Gln His Pro Ser His Met Asp Ile Pro Leu Asp
225                 230                 235                 240

Ser Lys Thr Phe Leu Ser Arg His Ser Met Asp Met Lys Phe Thr Tyr
                245                 250                 255

Cys Asp Asp Arg Ile Thr Glu Leu Ile Gly Tyr His Pro Glu Glu Leu
            260                 265                 270

Leu Gly Arg Ser Ala Tyr Glu Phe Tyr His Ala Leu Asp Ser Glu Asn
```

275 280 285

Met Thr Lys Ser His Gln Asn Leu Cys Thr Lys Gly Gln Val Val Ser
290 295 300

Gly Gln Tyr Arg Met Leu Ala Lys His Gly Gly Tyr Val Trp Leu Glu
305 310 315 320

Thr Gln Gly Thr Val Ile Tyr Asn Pro Arg Asn Leu Gln Pro Gln Cys
325 330 335

Ile Met Cys Val Asn Tyr Val Leu Ser Glu Ile Glu Lys Asn Asp Val
340 345 350

Val Phe Ser Met Asp Gln Thr Glu Ser Leu Phe Lys Pro His Leu Met
355 360 365

Ala Met Asn Ser Ile Phe Asp Ser Ser Gly Lys Gly Ala Val Ser Glu
370 375 380

Lys Ser Asn Phe Leu Phe Thr Lys Leu Lys Glu Glu Pro Glu Glu Leu
385 390 395 400

Ala Gln Leu Ala Pro Thr Pro Gly Asp Ala Ile Ile Ser Leu Asp Phe
405 410 415

Gly Asn Gln Asn Phe Glu Glu Ser Ser Ala Tyr Gly Lys Ala Ile Leu
420 425 430

Pro Pro Ser Gln Pro Trp Ala Thr Glu Leu Arg Ser His Ser Thr Gln
435 440 445

Ser Glu Ala Gly Ser Leu Pro Ala Phe Thr Val Pro Gln Ala Ala Ala
450 455 460

Pro Gly Ser Thr Thr Pro Ser Ala Thr Ser Ser Ser Ser Ser Cys Ser
465 470 475 480

Thr Pro Asn Ser Pro Glu Asp Tyr Tyr Thr Ser Leu Asp Asn Asp Leu
485 490 495

Lys Ile Glu Val Ile Glu Lys Leu Phe Ala Met Asp Thr Glu Ala Lys
500 505 510

Asp Gln Cys Ser Thr Gln Thr Asp Phe Asn Glu Leu Asp Leu Glu Thr

```
        515                 520                 525

Leu Ala Pro Tyr Ile Pro Met Asp Gly Glu Asp Phe Gln Leu Ser Pro
    530                 535                 540

Ile Cys Pro Glu Glu Arg Leu Leu Ala Glu Asn Pro Gln Ser Thr Pro
545                 550                 555                 560

Gln His Cys Phe Ser Ala Met Thr Asn Ile Phe Gln Pro Leu Ala Pro
                565                 570                 575

Val Ala Pro His Ser Pro Phe Leu Leu Asp Lys Phe Gln Gln Gln Leu
            580                 585                 590

Glu Ser Lys Lys Thr Glu Pro Glu His Arg Pro Met Ser Ser Ile Phe
        595                 600                 605

Phe Asp Ala Gly Ser Lys Ala Ser Leu Pro Pro Cys Cys Gly Gln Ala
    610                 615                 620

Ser Thr Pro Leu Ser Ser Met Gly Gly Arg Ser Asn Thr Gln Trp Pro
625                 630                 635                 640

Pro Asp Pro Pro Leu His Phe Gly Pro Thr Lys Trp Ala Val Gly Asp
                645                 650                 655

Gln Arg Thr Glu Phe Leu Gly Ala Ala Pro Leu Gly Pro Pro Val Ser
            660                 665                 670

Pro Pro His Val Ser Thr Phe Lys Thr Arg Ser Ala Lys Gly Phe Gly
        675                 680                 685

Ala Arg Gly Pro Asp Val Leu Ser Pro Ala Met Val Ala Leu Ser Asn
    690                 695                 700

Lys Leu Lys Leu Lys Arg Gln Leu Glu Tyr Glu Glu Gln Ala Phe Gln
705                 710                 715                 720

Asp Leu Ser Gly Gly Asp Pro Pro Gly Gly Ser Thr Ser His Leu Met
                725                 730                 735

Trp Lys Arg Met Lys Asn Leu Arg Gly Gly Ser Cys Pro Leu Met Pro
            740                 745                 750

Asp Lys Pro Leu Ser Ala Asn Val Pro Asn Asp Lys Phe Thr Gln Asn
```

```
        755                 760                 765

Pro Met Arg Gly Leu Gly His Pro Leu Arg His Leu Pro Leu Pro Gln
    770                 775                 780

Pro Pro Ser Ala Ile Ser Pro Gly Glu Asn Ser Lys Ser Arg Phe Pro
785                 790                 795                 800

Pro Gln Cys Tyr Ala Thr Gln Tyr Gln Asp Tyr Ser Leu Ser Ser Ala
                805                 810                 815

His Lys Val Ser Gly Met Ala Ser Arg Leu Leu Gly Pro Ser Phe Glu
            820                 825                 830

Ser Tyr Leu Leu Pro Glu Leu Thr Arg Tyr Asp Cys Glu Val Asn Val
        835                 840                 845

Pro Val Leu Gly Ser Ser Thr Leu Leu Gln Gly Gly Asp Leu Leu Arg
    850                 855                 860

Ala Leu Asp Gln Ala Thr
865                 870
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<210> 61
<211> 2004
<212> DNA
<213> homo sapiens

<400> 61

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ttcgcccgcg gcgtcagcgc ccacctggac aaggcctcta tcatgcgcct caccatcagc    180

tacctgcgca tgcaccgcct ctgcgccgca ggggagtgga accaggtggg agcaggggga    240

gaaccactgg atgcctgcta cctgaaggcc ctggagggct tcgtcatggt gctcaccgcc    300

gagggagaca tggcttacct gtcggagaat gtcagcaaac acctgggcct cagtcagctg    360

gagctcattg gacacagcat ctttgatttc atccaccccc gtgaccaaga ggagcttcag    420

gacgccctga ccccccagca gaccctgtcc aggaggaagg tggaggcccc cacggagcgg    480

tgcttctcct tgcgcatgaa gagtacgctc accagccgcg ggcgcaccct caacctcaag    540

gcggccacct ggaaggtgct gaactgctct ggacatatga gggcctacaa gccacctgcg    600

cagacttctc cagctgggag ccctgactca gagcccccgc tgcagtgcct ggtgctcatc    660
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tgcgaagcca tcccccaccc aggcagcctg gagcccccac tgggccgagg ggccttcctc 720

agccgccaca gcctggacat gaagttcacc tactgtgacg acaggattgc agaagtggct 780

ggctatagtc ccgatgacct gatcggctgt tccgcctacg agtacatcca cgcgctggac 840

tccgacgcgg tcagcaagag catccacacc ttgctgagca agggccaggc agtaacaggg 900

cagtatcgct tcctggcccg gagtggtggc tacctgtgga cccagaccca ggccacagtg 960

gtgtcagggg gacggggccc ccagtcggag agtatcgtct gtgtccattt tttaatcagc 1020

caggtggaag agaccggagt ggtgctgtcc ctggagcaaa cggagcaaca ctctcgcaga 1080

cccattcagc ggggcgcccc ctctcagaag gacaccccta accctgggga cagccttgac 1140

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gatggggctt cagtagcagc cactcccagc accccgctgg ccacacggca cccccaaagt 1320

cctctttcgg ctgatctccc agatgaacta cctgtgggca ccgagaatgt gcacagactc 1380

ttcacctccg ggaaagacac tgaggcagtg gagacagatt tagatatagc tcaggatgct 1440

gatgctctgg atttggagat gctggccccc tacatctcca tggatgatga cttccagctc 1500

aacgccagcg agcagctacc cagggcctac cacagacctc tgggggctgt cccccggccc 1560

cgtgctcgga gcttccatgg cctgtcacct ccagcccttg agccctccct gctaccccgc 1620

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tctcccatgg ctggggctcg gaagaggacc ctggcccaga gctcagagga cgaggacgag 1740

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ctgcaggacc ccagcacccc actcctgaac ctgaatgagc ccctgggcct gggcccctca 1920

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gcaggctcag cccaggctga ctga 2004

<210> 62
<211> 667
<212> PRT
<213> homo sapiens

<400> 62

Met Asp Trp Gln Asp His Arg Ser Thr Thr Glu Leu Arg Lys Glu Lys
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Ser Arg Asp Ala Ala Arg Ser Arg Arg Ser Gln Glu Thr Glu Val Leu
20 25 30

Tyr Gln Leu Ala His Thr Leu Pro Phe Ala Arg Gly Val Ser Ala His
35 40 45

Leu Asp Lys Ala Ser Ile Met Arg Leu Thr Ile Ser Tyr Leu Arg Met
50 55 60

His Arg Leu Cys Ala Ala Gly Glu Trp Asn Gln Val Gly Ala Gly Gly
65 70 75 80

Glu Pro Leu Asp Ala Cys Tyr Leu Lys Ala Leu Glu Gly Phe Val Met
85 90 95

Val Leu Thr Ala Glu Gly Asp Met Ala Tyr Leu Ser Glu Asn Val Ser
100 105 110

Lys His Leu Gly Leu Ser Gln Leu Glu Leu Ile Gly His Ser Ile Phe
115 120 125

Asp Phe Ile His Pro Cys Asp Gln Glu Glu Leu Gln Asp Ala Leu Thr
130 135 140

Pro Gln Gln Thr Leu Ser Arg Arg Lys Val Glu Ala Pro Thr Glu Arg
145 150 155 160

Cys Phe Ser Leu Arg Met Lys Ser Thr Leu Thr Ser Arg Gly Arg Thr
165 170 175

Leu Asn Leu Lys Ala Ala Thr Trp Lys Val Leu Asn Cys Ser Gly His
180 185 190

Met Arg Ala Tyr Lys Pro Pro Ala Gln Thr Ser Pro Ala Gly Ser Pro
195 200 205

Asp Ser Glu Pro Pro Leu Gln Cys Leu Val Leu Ile Cys Glu Ala Ile
210 215 220

Pro His Pro Gly Ser Leu Glu Pro Pro Leu Gly Arg Gly Ala Phe Leu
225 230 235 240

Ser Arg His Ser Leu Asp Met Lys Phe Thr Tyr Cys Asp Asp Arg Ile
245 250 255

Ala Glu Val Ala Gly Tyr Ser Pro Asp Asp Leu Ile Gly Cys Ser Ala
260 265 270

```
Tyr Glu Tyr Ile His Ala Leu Asp Ser Asp Ala Val Ser Lys Ser Ile
        275                 280                 285

His Thr Leu Leu Ser Lys Gly Gln Ala Val Thr Gly Gln Tyr Arg Phe
    290                 295                 300

Leu Ala Arg Ser Gly Gly Tyr Leu Trp Thr Gln Thr Gln Ala Thr Val
305                 310                 315                 320

Val Ser Gly Gly Arg Gly Pro Gln Ser Glu Ser Ile Val Cys Val His
                325                 330                 335

Phe Leu Ile Ser Gln Val Glu Glu Thr Gly Val Val Leu Ser Leu Glu
            340                 345                 350

Gln Thr Glu Gln His Ser Arg Arg Pro Ile Gln Arg Gly Ala Pro Ser
        355                 360                 365

Gln Lys Asp Thr Pro Asn Pro Gly Asp Ser Leu Asp Thr Pro Gly Pro
    370                 375                 380

Arg Ile Leu Ala Phe Leu His Pro Pro Ser Leu Ser Glu Ala Ala Leu
385                 390                 395                 400

Ala Ala Asp Pro Arg Arg Phe Cys Ser Pro Asp Leu Arg Arg Leu Leu
                405                 410                 415

Gly Pro Ile Leu Asp Gly Ala Ser Val Ala Ala Thr Pro Ser Thr Pro
            420                 425                 430

Leu Ala Thr Arg His Pro Gln Ser Pro Leu Ser Ala Asp Leu Pro Asp
        435                 440                 445

Glu Leu Pro Val Gly Thr Glu Asn Val His Arg Leu Phe Thr Ser Gly
    450                 455                 460

Lys Asp Thr Glu Ala Val Glu Thr Asp Leu Asp Ile Ala Gln Asp Ala
465                 470                 475                 480

Asp Ala Leu Asp Leu Glu Met Leu Ala Pro Tyr Ile Ser Met Asp Asp
                485                 490                 495

Asp Phe Gln Leu Asn Ala Ser Glu Gln Leu Pro Arg Ala Tyr His Arg
            500                 505                 510
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```
Pro Leu Gly Ala Val Pro Arg Pro Arg Ala Arg Ser Phe His Gly Leu
        515                 520                 525

Ser Pro Pro Ala Leu Glu Pro Ser Leu Leu Pro Arg Trp Gly Ser Asp
    530                 535                 540

Pro Arg Leu Ser Cys Ser Ser Pro Ser Arg Gly Asp Pro Ser Ala Ser
545                 550                 555                 560

Ser Pro Met Ala Gly Ala Arg Lys Arg Thr Leu Ala Gln Ser Ser Glu
                565                 570                 575

Asp Glu Asp Glu Gly Val Glu Leu Leu Gly Val Arg Pro Pro Lys Arg
            580                 585                 590

Ser Pro Ser Pro Glu His Glu Asn Phe Leu Leu Phe Pro Leu Ser Leu
        595                 600                 605

Ser Phe Leu Leu Thr Gly Gly Pro Ala Pro Gly Ser Leu Gln Asp Pro
    610                 615                 620

Ser Thr Pro Leu Leu Asn Leu Asn Glu Pro Leu Gly Leu Gly Pro Ser
625                 630                 635                 640

Leu Leu Ser Pro Tyr Ser Asp Glu Asp Thr Thr Gln Pro Gly Gly Pro
                645                 650                 655

Phe Gln Pro Arg Ala Gly Ser Ala Gln Ala Asp
            660                 665
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<210> 63
<211> 12
<212> PRT
<213> homo sapiens

<400> 63

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Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Gly
1               5                   10
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<210> 64
<211> 11
<212> PRT
<213> homo sapiens

<400> 64

Ala Gln Arg Lys Arg Lys Met Glu His Asp Gly
1 5 10

<210> 65
<211> 11
<212> PRT
<213> homo sapiens

<400> 65

Phe Asp Lys Leu Lys Lys Glu Pro Asp Ala Leu
1 5 10

<210> 66
<211> 12
<212> PRT
<213> homo sapiens

<400> 66

Glu Val Ala Leu Lys Leu Glu Pro Asn Pro Glu Ser
1 5 10

<210> 67
<211> 12
<212> PRT
<213> homo sapiens

<400> 67

Asp Met Val Asn Glu Phe Lys Leu Glu Leu Val Glu
1 5 10